UNIVERSITY OF BORÅS

Surface Chemistry and Chemical Treatment

Ytkemi och kemisk behandling

10.5 credits
10.5 högskolepoäng

Ladok Code: 52YK01
Version: 1.0
Established by: The Teaching Committee 2011-09-22
Valid from: Autumn 2011

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Textile Engineering (A1N)
Disciplinary Domain: Technology
Prerequisites: These prerequisites do not apply to students within the programme Science without Borders

Bachelor's degree in Textile engineering and successful completion of the course Textile chemistry with environmental chemistry,7.5 Credits.
Subject Area: Textile Technology
Grading Scale: ECTS-credits

Content

Surface chemistry, 4.5 HEC

Production and cleaning of dispersed systems

Surface charging and double layers

DLVO theory

Steric stabilisation

Electrophoretic phenomena

Surface tension

Use of surfactants

Water-soluble surfactants

Chemical treatment, 6.0 HEC

Chemical treatment of textiles: chemical softening, easy-care finishing, water, oil and dirt repellent finishing, flame retardant finishing , antistatic finishing, antimicrobial and antiodour finishing , UV protection finishing.

Newer developments in f functionalisation of textile fibres and surface modification as well as in the use of nanotechnology within textile treatment: methods for, and applications of graft polymerisation, deposition of nanoparticles, coating with nanocomposites using sol-gel technology, modification of fibre surfaces using enzymes

Environmental and health impact of chemical treatment of textiles, current environmental legislation

Learning Outcomes

The student should, after completing and passing the course, be able to demonstrate an in-depth knowledge and understanding of chemical methods for treating textiles, the chemical structure and properties of textile chemicals and the chemistry of textile processes. The student should be able to demonstrate knowledge of newer methods for functionalisation of textile fibres and surface modification. Students should be able to demonstrate a knowledge of the environmental

and health impact of chemical treatment of textiles, and of current environmental legislation.

Students should be able to explain concepts relevant in the field of surface and colloidal chemistry, and should be able to describe phenomena that occur at interfaces and in dispersed systems. Students should be able to describe the importance of surface and colloidal chemistry in industry and should be capable of resolving simple problems occurring in industrial environments.

Forms of Teaching

Lectures, seminars, laboratory experiments and project work.

Teaching will be conducted in English

Forms of Examination

Surface chemistry, 4.5 HEC:

Written examination in Surface chemistry, 3.5 HEC. Grading scale: EC

Laboratory experiments and written and oral account of project work within surface chemistry, 1.0 HEC

Grading scale: EC

Chemical treatment, 6.0 HEC:

Written examination in Chemical treatment, 5.0 HEC. Grading scale: EC

Submitted assignments in chemical treatment, 1.0 HEC. Grading scale: EC

The grade for the entire course will be based on the grades for each examination.

Each examination will be offered on 5 occasions, at least 3 of which will be within the space of one year.

An offered examination opportunity refers to a scheduled examination or re-examination, or a set date for written or oral presentations.

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Materials

Student Influence and Evaluation

Miscellaneous

The course is first and foremost a programme course for the one-year and two-year Master's students in Textile engineering.